



United States
Office of Personnel Management

Grade Evaluation Guide for Aid and Technical Work in the Biological Sciences

GS-0400

**Human Resources Systems Service
Office of Classification
April 1996, HRCD-1**

NOTE

This standard has been converted from the original paper format to electronic format without substantive change in series coverage or grading criteria. The standard was reviewed to correct errors that may have been introduced during the conversion process. In some standards minor corrections were made such as updating references to other documents that may have become obsolete, or correcting minor typographical errors in the original standard. Any errors that remain due to conversion to electronic format should be minor and are not intended to change the meaning of the original standard.

If you find page references near the right hand margin of this standard they indicate the pagination of the official, printed version of this standard. For example, a notation "Page 2, 4/88, TS-87" would mean that (1) page two of the printed version begins here, (2) the date of issuance was 4/88, and (3) the Transmittal Sheet number was TS-87.

GRADE LEVEL GUIDE FOR AID AND TECHNICIAN WORK IN THE BIOLOGICAL SCIENCES GS-400

CONTENTS

COVERAGE	1
DISTINGUISHING TECHNICIAN FROM PROFESSIONAL POSITIONS .	2
EVALUATING POSITIONS	2
FACTOR LEVEL RELATIONSHIPS	2
FACTOR EVALUATION SYSTEM GRADES CONVERSION TABLE ...	3
FACTOR LEVEL DESCRIPTIONS	3
FACTOR 1, KNOWLEDGE REQUIRED BY THE POSITION	3
FACTOR 2, SUPERVISORY CONTROLS	13
FACTOR 3, GUIDELINES	15
FACTOR 4, COMPLEXITY	16
FACTOR 5, SCOPE AND EFFECT	18
FACTOR 6, PERSONAL CONTACTS AND FACTOR 7, PURPOSE OF CONTACTS	19
FACTOR 8, PHYSICAL DEMANDS	20
FACTOR 9, WORK ENVIRONMENT	21

SERIES DEFINITION

This guide provides general criteria for use in determining the proper grade level of nonsupervisory and nonleader aid and technician positions that are concerned with supporting work efforts related to the biological sciences in the Federal service. Positions that are to be evaluated by this guide require a practical level knowledge of the principles and techniques of the appropriate science, but do not require application of professional knowledge and training in a scientific field.

COVERAGE

This guide contains the primary criteria for determining the grade level for aid and technician positions in the Biological Science Group, GS-400.

Positions evaluated by this guide may support a variety of types of work efforts, including research, compliance, investigation, or development of projects, and/or the development, design, inspection, construction, production, application, standardization, testing, operation, or maintenance of facilities, systems, processes, equipment, forests (or other Federal lands), processes, devices, or materials.

Page 2 12/91 TS-111

This guide is primarily concerned with providing grade level criteria for work involved with performing various aid and technician tasks or duties within a framework of procedures, precedents, or instruction. For purposes of this guide, the terms aid and technician are defined below:

- Aid: This work requires a knowledge of the procedural requirements and processes involved in supporting the technical work of a unit. It usually consists of "technician trainee" tasks. Aids perform such support work as collecting, preparing, receiving, reviewing, and verifying documents and samples; maintaining office records; locating and compiling data or information from files and other data sources; or performing other comparable support tasks more commonly associated with clerical work. Aids in other instances may also perform, as part of their total job, feeding and caring for animals; wrangling or otherwise herding stock; washing and maintaining equipment; operating machinery or equipment; performing physical labor; or performing other comparable support duties more commonly associated with Federal Wage System occupations (refer to the Introduction to the Position Classification Standards for more information on classifying clerical work and for criteria on distinguishing between GS and Federal Wage System positions).

Page 4 12/91 TS-111

- Technician: This work requires performing duties or tasks which demonstrably and directly support the operation of scientific endeavors and programs of individual biological scientists or of an organization when the work requires a practical knowledge of the terminology, procedures, methods and practices of one or more of the biological sciences and, at higher levels, a familiarity with the concepts and principles of the science(s) and an understanding of the mission and operational requirements of an organization. A primary characteristic of technician positions is the requirement to use tools peculiar to the science supported, including various measuring, automated data processing, x-ray, surveying, and other comparable devices or instruments, and often the application of arithmetic and some mathematics. It is one grade interval work for personnel management purposes.

DISTINGUISHING TECHNICIAN FROM PROFESSIONAL POSITIONS

At the GS-5 and above grade levels it is sometimes difficult to distinguish biological science technician positions from developmental level, e.g., GS-5, GS-7, and, often, GS-9, two grade interval positions in the scientific field supported or even in the same unit. The technician's experience in a specialty area or a local area can lead to such highly specialized but narrow job knowledge that the technician may direct a limited functional area or even train the developing professional in local methods and practices during some phase of a multiphase, career development plan for the professional. Additional information on this topic and guidance on making this distinction may be found in the Introduction to the Position Classification Standards and in The Classifier's Handbook.

EVALUATING POSITIONS

Positions should be evaluated on a factor-by-factor basis using the factor-level descriptions provided in this standard. Only the designated point values may be used. More complete information for evaluating positions are in the Instructions for the Factor Evaluation System. Use the primary standard or a related FES standard, or both, to evaluate positions for which factor levels lower or higher than those described in this standard are applicable. In addition, the absence of an example or illustration in a given factor level description does not preclude evaluating a particular specialty at that level.

Page 3 12/ 1991 TS-111

FACTOR LEVEL RELATIONSHIPS

The following table illustrates how the FES factor levels combine in typical technician positions at grades GS-4 through GS- 9, the level at which most technicians are found. The table is provided to aid users in understanding the most common factor relationships at each grade. However, other combinations of factors may be appropriate for particular positions. For example, one incumbent might be placed at the GS-7 grade level because of a lack of

close supervision, while another is placed there because a higher level of knowledge is required although the work is more closely supervised. As another example, otherwise similar positions may have different levels under Factor Level 9 because one incumbent, on a regular and recurring basis, works with laboratory specimens in a freezer while another does not. In short, the following chart is to be used as a guide to judgment, not a substitute for it.

FACTOR EVALUATION SYSTEM GRADES CONVERSION TABLE

FACTORS	04	05	06	07	08	09
Knowledge	1-3	1-4	1-4	1-5	1-5	1-6
Supervisory Controls	2-2	2-2	2-3	2-3	2-3	2-3
Guidelines	3-1	3-2	3-2	3-2	3-3	3-3
Complexity	4-2	4-2	4-2	4-3	4-3	4-3
Scope/Effect	5-2	5-2	5-2	5-3	5-3	5-3
Contacts	2	2	2	2	2	2
Purpose	a	a	b	b	b	b
Physical Demands	8-2	8-2	8-2	8-2	8-2	8-2
Environment	9-2	9-2	9-2	9-2	9-2	9-2

Page 4 12/ 1991 TS-111

GRADE CONVERSION TABLE

Total points on all evaluation factors are converted to GS grade as follows:

GS Grade	Point Range
2	255-450
3	455-650
4	655-850
5	855-1100
6	1105-1350
7	1355-1600
8	1605-1850
9	1855-2100

Page 5 12/ 1991 TS-111

FACTOR LEVEL DESCRIPTIONS

FACTOR 1, KNOWLEDGE REQUIRED BY THE POSITION

NOTE: The following factor levels contain references to organizational location. The organizational location of a position lone would not indicate use of a factor level. References to organizational location are used only to further illustrate the concepts contained in the various factor levels.

Level 1-2 -- 200 Points

Employees use a knowledge of the basic or commonly used rules, procedures, or operations associated with aid types of duties to perform a few repetitive tasks while learning how to perform the full range of such tasks as are found in the work area.

-OR-

Employees use a knowledge of the basic or commonly used rules, procedures, and operations associated with aid duties to apply them in learning how to perform a few of the routine technical tasks common to the organization.

-OR-

Also at this level is the knowledge required to operate equipment which requires some previous training or experience, such as keyboard equipment.

PAGE 10 12/91 TS-111

Level 1-3 -- 350 Points

Employees use a knowledge of the processes, methods, and procedures associated with aid level duties combined with a basic grasp of technical concerns to perform the full range of standardized support duties commonly found in the work area. The duties require the ability to perform independently, while learning when and how to resolve exceptions and special problems or to make adaptations in the sequencing of the interrelated tasks associated with those aid level duties.

Page 6 12/ 1991 TS-111

-OR-

Employees use a knowledge of the processes, methods, and procedures associated with technician duties to apply a limited number of the technical methods and procedures applicable to duties common to the biological science(s) supported with little discretion to deviate from the technical methods assigned for use. For example, the technician works in a position limited to supporting the efforts of more seasoned technicians who are themselves performing standard technical tasks found in the work area. The technician would record instrument readings; collect a specified amount, quantity, and type of samples; or take

measurements; but would not be expected to interpret the results, i.e., would not be required to assess the quality and applicability of the data in light of the higher objectives to which the data relate.

Page 7 12/ 1991 TS-111

-OR-

Also at this level is the knowledge required to operate basic equipment when (1) performing standardized tests or when taking readings and measurements and repetitively producing the same type of product or (2) assisting higher level technicians with the operation of more sophisticated equipment or equipment systems.

Level 1-4 -- 550 Points

Employees at this level use a knowledge of the processes, methods, and procedures associated with aid types of duties to resolve the full range of irregular or problem situations when performing a wide variety of either highly interrelated tasks or nonstandard assignments.

-OR-

Employees use a knowledge of the technical methods and procedures for a work area to employ them in carrying out (alone or as a fully functioning team or crew member) a variety of technical duties common to the specialty area. The duties require a knowledge of the basic principles of a biological science to assess readings and measurements taken, tests executed, observations made, work completed, samples collected, etc., to understand and relate the significance of the results to the higher objectives to which the activity is related, i.e., the technician must assess the worth of the data by considering its applicability to the higher objective, by assessing and reporting on the characteristics and quality of the source of the data, or by otherwise creatively interpreting the data produced. Also, some technicians at this level are concerned with interpreting results of standard tests repetitively performed in the organization based on previous experience and observations.

-OR-

Also at this level is the knowledge required to operate complex equipment systems such as those with numerous components or parts which must be calibrated and synchronized to achieve desired results, e.g., those used in highly mechanized cartographic, hydrographic, or photogrammatic surveying; pressure chamber diving experiments; or sophisticated laboratory experiments on fluids.

This may be the full performance level for some technician positions, such as those found in a field or production environment where a limited variety of standardized technical duties are available for assignment, or in a research environment where workload or administrative or other controls restrict the duties assignable to the technician.

Illustrations

1. In assignments that support basic and applied research, the technician executes growing or pollination plans; acquires test and control subjects; sets up cultures, pens, or plots; ensures the specified care of subject plants, animals, or organisms; inventories and records pedigree of animals, organisms, seeds, pollens, or comparable items; records observations of changes of behavior; charts such measurements as rate of growth or weight gain; harvests cultures; assists with the processing of seeds, blood, or organs; and extracts, grades, counts, classifies, and/or prepares such items for storage.
2. In assignments that support pest management field projects and program planning activities, the technician serves as a team member (or, occasionally, the crew leader) of a team making examinations of pest problems. The technician collects insect and disease samples and assists in the identification and damage assessment of any problems they have caused; compiles and summarizes data from surveys, biological evaluations, and pilot tests; runs routine computer programs and checks resulting data for inconsistencies; provides results to professional personnel for refinement, adjustments, and analysis; and may assist in the preparation of reports. In addition, the technician may maintain, calibrate, and modify complex equipment used for a variety of test and evaluation procedures; set up and conduct standardized tests for seedling or other infection in resistance screening studies; design and conduct limited aerial photography missions to detect pest populations; and properly time and conduct seed orchard or other surveys to evaluate population densities and identify trends of potentially destructive seed, cone, or other plant pests.

PAGE 8 12/91 TS-111
3. In a laboratory setting, the technician uses a variety of equipment to perform a sequence of standardized tasks such as postmortem excision of glands when the work is done repetitively on the same types of animals; separation of organisms into classes or general morphological groups; identification of species or strains of microorganisms frequently encountered; and detection of the onset and course of expected pathological symptoms, e.g., tumors or fungi, in experimental plants or animals when the detection can be made by direct observation. In other laboratory settings the technician performs bioassay, area determinations, electrophoresis, centrifugation, chemical study, and temperature and relative humidity measurements of tissue, soil, and water samples.
4. The technician assists in meeting the soil conservation objectives defined for farms in a county by advising landowners on the use of one or several single alternative practices for which the methodology is well established, e.g., contour cultivation, grass waterways, terracing, tree planting, field windbreaks, grass and legume seeding, and farm drains. The employee surveys and prepares layout and technical requirements; selects site, method, and sequence of installing the practice(s) used; schedules

installation of work; and adjusts plan to site factors such as poor surface drainage, stream bank erosion, hardpan, and loose topsoil.

PAGE 9 12/91 TS-111

5. The technician conducts on-site surveillance of contractor or agency crews engaged in timber stand improvement or reforestation when assignments are limited by a lack of significant growth problems, timber stands are typically pure, and assignments involve only a few silvicultural practices. The technician surveys recently planted tracts, using standard sampling procedures to ascertain survival rate of seedlings and reports general growth conditions and apparent causes for seedling failure.
6. The technician performs a variety of range management functions. For example: the technician inspects range allotments to collect data for assessing compliance, i.e., counts livestock and notes such things as the proper location of salt blocks; notes and reports on utilization and grazing impact; maps out key areas of use; notes erosion and other stream bank problems; and inspects structural range improvements and reports violations or needed maintenance. Other assignments require that the technician assist with supervision of work crews engaged in the construction of water impoundments, fences, and comparable structures; participate in noxious plant control, seeding, or similar projects by flagging boundaries, operating equipment, assessing the level of compliance with work orders, etc.; locate and count wild horses; prepare kill rate of specified game after severe weather; and perform other comparable tasks.
7. The technician assists others in the performance of a variety of wildlife management duties. For example, the technician assembles basic information on fish and wildlife populations such as habitat use, sex and age structure, seasonal movement and harvest characteristics; assumes responsibility for limited projects such as maintaining a network of seasonal traps; collects anatomical materials and makes preliminary assessment of such things as habitat preference and population dynamics; collects data on condition of forage, range, or streams; and makes preliminary determinations on the cause of problems noted, e.g., drought, overpopulation, or toxins. The technician also assists in the development of plans and guidelines on such issues as seasons of recreational use or hunting limits by collecting and compiling specified data; executes portions of the plans, e.g., plans for and oversees the work of seasonal labor crews engaged in such planned activity as crop planting, brush removal, or stream bed cleaning; and performs a variety of other comparable tasks.
8. The technician assists in determining the marketable content (scaling) of logs used for a variety of commercial purposes in situations where (1) there are few problems of adequate visibility and most logs are evaluated as one log and (2) the extent of log defect is relatively easy to identify and estimate since the defects are typically of less complex kinds, e.g., sweep, crook, simple breakage, simple stump rot, and are relatively isolated.

PAGE 10 12/91 TS-111

9. The technician assists in timber cruising and sample surveys to estimate the quantity of timber on a given area by species, type, and quality. Typically, the area, per cent of cruise, and data to be collected have been predetermined and there are few complicating factors involved in determining marketable volume in any individual tree, e.g., the timber stands have relatively similar features such as timber type and species, age classes, soil classes, tree vigor, and obvious defects, and the timber cutting generally involves only one cutting practice such as precommercial thinning or clear cut. The technician collects and summarizes data and may prepare reports or rough topographic maps indicating the quantity of timber and other characteristics, the general condition of the area, and the logging difficulties to be encountered.

Level 1-5 -- 750 Points

At this level the employee uses knowledge of the technical methods and procedures related to the professional field(s) supported, of management practices, and of the agency's policy and programs to lay out, schedule, organize, and execute the details of either: (1) a wide variety of types of limited operational projects incorporating diverse technical knowledges, e.g., limited projects requiring the application of appreciably dissimilar specialized methods, procedures and/or techniques; and/or (2) one- at-a-time (and often long range) multiphased projects, at least some of which have nonstandard technical problems that the technician must coordinate with others to resolve, e.g., technical problems requiring the use of specialized, complicated techniques.

PAGE 11 12/91 TS-111

Technicians at this level also characteristically apply a practical knowledge of the basic theories and practices of the scientific discipline(s) supported (though emphasis is on the numerous precedents repetitively employed in the organization) and must be adept at combining this knowledge with resourcefulness, initiative, and independent judgment in locating precedents and resolving the details inherent to application.

Illustrations

1. In assignments which support basic and applied research, the technician: (a) executes the administrative aspects of a study plan, e.g., secures a specified type of field site or laboratory, prepares justifications for using animal subjects, prepares environmental impact statements when they are straight forward and well-precedented, orders supplies and equipment, lays out site, ensures the preparation of a soil analysis, develops instructions for feeding, care, light conditions and other such concerns, and secures services of animal caretakers or laborers; (b) develops data called for by the study plan, e.g., observes subjects and makes notes of observations, develops a procedure for and

varies water, food, heat, light, chemicals, or other such variables, excises organs and prepares slides, draws blood or collects other specimens, and carries out such procedures as mixing samples and specimens with reagents when performing chemical analysis, records the readings, and records a variety of other observations and outcomes; and (c) assists with compilation, justification, and refinement of the resulting data, e.g., prepares charts and summaries, assists in developing an appropriate computer program, performs computations and numerical summaries, and cross references facts, dates, and other data.

2. The technician schedules, organizes, and executes projects for identifying pest problems. Using prescribed procedures, the technician resolves common administrative concerns related to the project; collects insect and diseased samples, including the establishment of test and control plots, as necessary; compiles and summarizes the data that he/she obtains from surveys, biological evaluations, and pilot tests conducted as part of the project; runs computer programs to organize the data for analysis; and provides the data to professional personnel after checking it and developing explanations for unusually high or low figures or figures that seem inconsistent. Subsequently, he/she also assists with development of reports after higher graded employees have refined and justified the data and analyzed the results.

PAGE 12 12/91 TS-111

3. In a laboratory setting, the technician performs delicate manipulative work such as that requiring the use of micro manipulative techniques employing specially designed tubes, glassware, equipment, and magnifying devices; produces exact quantitative findings affected by very small errors in techniques such as might occur in agglutination tests involving the use of eight or ten dilutions for each specimen tested when pipette measurements must be exact and validity depends on precise determinations; performs postmortem excisions of a variety of organs and glands; performs animal surgery for the excision of organs; and executes the transfer of cell cultures where speed, avoidance of contamination, and highly exacting sterile techniques are necessary.
4. The technician assesses the need, plans for, and works with the land owner and contract crews in applying multiple soil conservation measures, such as: (a) center pivot irrigation and strip cropping; (b) conservation tillage practices (till plant, chisel plant, rotary strip, slot, and chisel plow), fertilization, and pesticide application; (c) land leveling, surface irrigation, and conservation cropping; or (d) combinations which, if applied alone, would more appropriately be evaluated at the next lower level, e.g., advising on seedings, terraces, diversions, grass waterways, standard erosion control structures, and wildlife habitat.
5. The technician develops a schedule and other plans for monitoring and inspecting timber stand improvement or reforestation operations, executes assignments which are precedented, and reports on contractor compliance with contract terms or standard specifications, as appropriate. Such assignments are further characterized by a forest area

having substantial variation in forest types and species involved; complex silvicultural problems related to topography, climate, or growth characteristics; and variations in methods and techniques commonly employed, including chemical injection and spraying. The technician interprets and explains standard contract provisions, the rationale behind technical methods to be employed, etc., and either obtains compliance or refers noncompliance or unprecedented problems to higher levels, and makes final inspections of projects.

PAGE 13 12/91 TS-111

6. The technician schedules and executes a variety of responsible projects related to range conservation programs. For example, the technician plans and organizes a project for minimizing range trespass, subsequently oversees field action and prepares detailed reports and serves as the unit's witness in court on the facts, as required; develops preliminary plans for implementing improvements to grazing allotment when a variety of range revegetation methods of installation and other such factors are involved and oversees implementation; works with permittees in preparing preliminary designs and plans for a variety of standardized revegetation projects; and monitors the effectiveness of agency or contractor crews in performing a variety of precedented types of revegetation, construction, and other such projects, ensuring the technical adequacy of the completed work.
7. The technician manages an ongoing wildlife management project of limited or seasonal scope, such as the annual program for trapping fur bearing animals. He/she ensures timely and proper issuance of notification, adherence to bidding rules, and issues permits. The employee monitors trapping activity to ensure that all regulations and contract specifications are adhered to and collects and organizes a variety of administrative and technical data useful to wildlife biologists in preparing annual reports and work plans. Also, the technician collects and maintains census data in the off season for use in planning for the next cycle and performs a variety of other seasonal support tasks.
8. The technician develops a schedule and other plans for monitoring reclamation operations of former mines which require application of a variety of precedented methods; monitors work; and inspects completed work and develops documentation which justifies his/ her proposal to approve completed work. In other instances, the technician may prepare reports on noncompliance with the technical methods specified and other terms and conditions of the operations plan. These assignments are further characterized as reclamation areas that have substantial variation in soil types involved; complex plant-growth problems related to topography, climate, or plant species; and variations in reclamation methods and techniques, including application of specialized fertilizers or provisions for temporary irrigation. The technician interprets and explains provisions of the reclamation plan and either obtains compliance or refers to higher levels instances of impasse, non-compliance, or technical problems which are unprecedented in the organization.

9. The technician develops a schedule and other plans for determining the marketable content of logs and executes assignments when they require a full range of scaling practices and techniques in work situations which are complicated by such considerations as: (a) relative difficulty in predicting or estimating defect in view of variety, extent, or kind of defect; (b) difficulty in obtaining accuracy because of a variety of trees involved, length of logs, etc.; and (c) unusual speed or accuracy requirements.
10. The technician plans and carries out precedented types of timber cruises or surveys to estimate the quantity of commercial timber by determining sample cruise pattern; selecting sampling method; collecting, and refining data; summarizing results, including preparation of maps and reports; when there are complicating factors such as: (a) varied types and conditions of timber stands; (b) a variety of products and defect types; and (c) different cutting practices.

Level 1-6 -- 950 Points

At this level the employee uses knowledge of the technical methods and procedures, management practices, agency policies and programs, and an extensive familiarity with the methods and practices of the science(s) or discipline(s) supported to:

- (1) design, coordinate, and execute complete conventional projects when the projects are well precedented in scientific literature and within the organization's technical and administrative guides but require the exercise of judgment based on critical analysis and evaluation of project objectives, past practices, source materials, alternatives among available work processes, and recognition of the intended use of completed work; or
- (2) participate responsibly with the scientist in most phases of the research process (development of original hypothesis and proposal excepted) and assume full technical and operational responsibility for three or more of the following phases: (a) development of a study plan, e.g., establishment of a procedure, outline of the methods to be used, and citation of the anticipated outcomes; (b) resolution of any administrative concerns and otherwise planning for and organizing the practical aspects of the study or experiment; (c) developing data through field, laboratory and/or workbench processes; (d) data refinement, verification, justification and organization; (e) analysis and evaluation; and/or (f) preparation of reports which summarize the progress and results of projects and/or preparation of assigned sections of publications or other dissemination; or
- (3) administratively maintain a significant function or area of responsibility on an ongoing basis, e.g., ensures proper day-to-day operation of (a) an isolated field site or other comparable subdivision of a first level unit; (b) a small laboratory wherein recurring types

of tests are performed and sufficient precedent exists to obviate the need for the on-site, day-to-day presence of a professional; and/or (c) a significant multiphase project or a discrete and ongoing technical function in a first level unit.

(4) perform other comparable duties.

This level is more typical of those science technicians who demonstrably exceed the next lower level, particularly as regards recognized expertise in a narrow specialty area of a scientific field or administrative responsibilities over a block of technical work. Technicians at this level have administrative and/or technical assignments, projects, and responsibilities which are hard to distinguish from those assigned to the less experienced (but post-trainee) scientists employed in the same organization to perform standardized professional level research studies, projects, or assignments or to perform routine administrative or professional work in support of higher level research scientists or program/project managers. In addition, not all technician positions can realistically be structured to (()) reach this level due to a variety of organizational reasons including: amount and type of high level work available in the organization; the scientist's or organization's willingness to delegate authority and controls for programs and projects; availability, number and/or assigned responsibilities of on-site professional workers, technician supervisors, or work leaders; ability of the technician; and other such limiting factors.

Page 16, 12/91, TS-111

Illustrations

1. The technician: (a) prepares a study plan for biological control experiments, using the scientist's hypothesis and relying on previous proposal(s); (b) he/she then attends to all the technical/ administrative concerns; (c) develops the data required; (d) refines, verifies, justifies, and organizes the data; (e) analyzes and evaluates findings; and (f) writes-up results for reviews. Such control experiments are, by definition, limited in that the variables are controlled so that the effects of changing one at a time can be observed and documented.
2. The technician performs project planning activity, adapts a design, and coordinates and executes pest management field projects. He/she develops a study plan which includes selecting the methods for pest detection, collection, identification, control and evaluation; 0 collects the data required; organizes, justifies, and refines the data collected; studies and evaluates the data; and writes up recommendations and other conclusions for approval prior to implementing, independently, the eradication procedures selected.
3. As a senior technician, performs any of a variety of responsible operations in a laboratory setting. For example: (a) maintains production levels in the absence of higher authority, e.g., on weekends or night shifts, when the tests or other operations are sufficiently preceded that the presence of a professional is not required, or when

Page 16, 12/91, TS-111

laboratory processes constitute a readily definable block of on-going administrative and technical work to be administered by the technician; (b) monitors the full range of special tests or processes, many of which require the application of nonroutine or specialized and exacting procedures, and takes corrective action; (c) accepts and resolves referrals of abnormal or unusual specimens, results, or observations from other personnel to provide a more seasoned second opinion; (d) establishes and monitors quality control procedures and coordinates the laboratory program with the overall quality control program of the facility; or (e) instructs technical staff, students and developing professionals in laboratory methods and practice.

Page 17, 12/91, TS-111

4. The technician carries out a sequence of responsible but limited projects in administering a segment or defined function of a large and diversified operation such as an ongoing silvicultural project for seed collection, processing, growing, and planting within a forest district, resource area, tribe, or refuge. Collects information to determine quantity, type, location, and other information on the future need for tree seedlings; prepares annual or other budget estimates based on previous experience gained during participation in planning such operations; ensures execution of the various phases of the project(s) by agency personnel or contractors; and represents the agency at meetings organized to keep the local public, contractors, or interest groups informed about the organization's objectives and activities.
- 5.. The technician manages precedented types of study projects concerned with habitat analysis for wildlife, fish, or plant populations. For example, he/she adapts a plan for executing the study; resolves administrative concerns; and collects, organizes and summarizes data on habitat conditions and diversity, and the extent of wildlife or fish use of forest, range, or aquatic habitats. Subsequently, the technician refines and justifies the data prior to preparing maps and other information for data base entry; studies the results to determine such things as distribution of endangered, threatened, sensitive, and other plant and animal species on assigned project areas or units; and generates conclusions or proposals.
6. The technician manages a function concerned with maintaining and improving wildlife or fish habitat for a limited area or unit of, for example, a forest. He/she uses established prescriptions and management plans on implementing a variety of projects for enhancing the environment for subject plants, fish, and animals; determines the need for and develops a timetable for such activity as prescribed fires, water developments, fish structures, vegetative treatments, and other standard practices to improve habitat conditions, and, subsequently, is responsible for monitoring and administering the habitats developed to continue assessing their effects on animal and plant species and communities, making adjustments as indicated by the observations, measurements, tests, and other monitoring performed.

Page 18, 12/91, TS-111

7. The technician develops plans for and may subsequently monitor major timber sales (as opposed to significant precommercial thinning as practiced in major forests or other more limited harvesting projects) in compliance with the management plan(s), use permits, and contract provisions covering such elements as timber utilization, skidding practices, slash disposal, fire prevention, road location and use, and wildlife protection. Assumes day-to-day responsibility for project monitoring and devises or recommends corrective practices for increased protection of resources when changes created by the work process or environmental conditions make it advisable or necessary.

FACTOR 2, SUPERVISORY CONTROLS

Level 2-1 -- 25 Points

The supervisor or a higher graded employee assigns specific tasks and provides clear, detailed, and specific oral or written instructions on the methods to be used in completing those tasks. On any field work the aid or technician typically accompanies an experienced employee. In other situations, assistance is also readily available for guidance in solving problems which might arise or for providing clarification of initial instructions.

The aid or technician works as instructed, consulting with the readily available authority on matters not specifically covered in the initial instructions or assigned guides which have been fully explained and reviewed, e.g., designated work samples or straightforward equipment operating guides and procedural manuals.

The work is closely controlled. The control may be through the structured nature of the work, e.g., use of only one or two prescribed and standard forms, or control may be maintained by checking tasks during performance or when completed for accuracy, adequacy, and adherence to instructions and established procedures. At this level, a close review and clearance of completed work, by manual or automated methods, is customary before the work product is considered to be completed or incorporated into a larger work product.

Page 19, 12/91, TS-111

Level 2-2 -- 125 Points

The supervisor or higher graded employee makes continuing assignments by initially indicating, orally or through written work orders, such criteria as the amount of work expected, general explanation of what is to be done, advice on the location of reference material or work samples, and the nature of the limits applicable to the assignments. He/she provides additional specific instructions for new, more difficult, or unusual assignments or those which are not straightforward and/or repetitive.

Within established procedures, the aid or technician independently executes the task sequences associated with recurring and continuing work and makes adjustments to accommodate needed minor deviations in work methods. The sequence in which the employee performs recurring individual tasks within the assigned block of work typically is

based on guidelines, precedent actions, and prior experience in performing the tasks. Unfamiliar situations or technical deviations from established practices are referred to the supervisor for guidance or resolution.

The supervisor or work leader assures that tasks completed, data developed, the methods used in securing and verifying data, and application of guidelines are technically accurate and in compliance with instructions and established procedures. Assignments with problems new to the aid or technician and/or which require special handling or guidance are checked in more detail to insure accuracy and to make certain that any special instructions were carried out properly.

Level 2-3 -- 275 Points

The supervisor or other designated authority initially provides direction on the priorities, objectives, and/or deadline for types of work previously performed by the unit and therefore covered by precedent. Assignments new to the organization or unusual assignments may be accompanied with a general background discussion, including advice on the location of reference material to use.

Page 20, 12/91, TS-111

The technician identifies the work to be done to fulfill project requirements and objectives, plans and carries out the procedural and technical steps required, seeks assistance as needed, independently coordinates work efforts with outside parties, and characteristically submits only completed work. The technician also exercises initiative in developing his/her own solution to common technical and procedural problems such as changes in priorities, need for extended field time, minor need for additional equipment or personnel, and other such comparable issues. However, the technician seeks administrative direction or decision from higher authority on the course to follow when encountering significant technical or procedural problems with the work, e.g., when project objectives appear to substantially exceed available equipment and staffing capacities or when technical issues new to the organization are encountered. In such instances the technician may be expected to develop proposals, typically with supporting justification, for resolving the problem.

Review is usually in the form of an assessment as to how the technician resolved technical and related administrative problems encountered, e.g., success in (a) meeting deadlines, (b) developing solutions to problems encountered, (c) executing the work in accordance with agency policy and accepted scientific practices, (d) producing projects and administering operations which are both technically sound and complete in terms of such criteria as the user's needs, the project's objectives, and the established requirements of the organization. These reviews emphasize the quality of judgment used by the technician in resolving technical and administrative problems noted in reports or identified by those with whom the technician interacted. Accuracy of the data produced, quality of observations made, and the sufficiency of steps employed in planning and executing the work assigned are customarily accepted without detailed review.

FACTOR 3, GUIDELINES

Level 3-1- -- 25 Points

Characteristically, the guidelines are directly applicable, specific, and used repetitively in the work. The routinely used portions of the guidelines, e.g., those used on a day-to-day basis, are often memorized or are quickly referenced. Guidelines on equipment operating procedures and their applications are readily mastered and generally pertain to basic procedures such as equipment set up and operation or equipment cleaning and maintenance procedures. These guidelines typically consist of such things as standing oral instructions, written guides, charts, manuals, schedules, equipment manufacturers' operating manuals, standard and established operating procedures, and agency regulations.

This level requires little or no judgment in applying the guidelines, i.e., the applicable one is typically obvious, though the step-by-step procedures may require careful attention and consideration of detail to execute. The employee works in strict adherence to the guidelines, referring needed deviations or those with a lack of clarity to the supervisor.

Level 3-2 -- 125 Points

Procedures for doing the work have been established and a number of specific guidelines are applicable. These guides may range from complex, standardized, codified regulations, (such as Federal or agency manuals with agency, bureau, regional, and/or other supplements) to maps, blueprints, standing operating procedures, oral instructions, equipment or instrument manuals, or standard scientific or technical texts.

The employee must use judgment in selecting the appropriate guideline because of the number, similarity, linkage, and overlapping nature of the guides, e.g., when State law, Federal law, and agency regulations address the same issue. Most important, however, is that the guidelines contain criteria to solve the core question or problem contained in the assignments, though the applicability may not be readily apparent, i.e., the guides often require careful study and cross referencing. At its upward range, this level also applies to the aid or technician who must be especially resourceful in searching assigned guides, locating the controlling criteria, and applying it as specified, though the process of locating and selecting the applicable rule may be taxing and time consuming.

Page 22, 12/91, TS-111

Level 3-3 -- 275 Points

The technician works with new requirements or applications for which only general guidelines are available or with assignments where the most applicable guides are limited to general functional statements and/or work samples which are not always directly related to the core problem of the assignments, have gaps in specificity, or are otherwise not completely applicable.

The employee exercises judgment independently in applying the guidelines or extending their applicability to situations not specifically covered; uses guidelines as the basis for making procedural deviations from established administrative and/or technical methods; or otherwise adapts guidelines when judgment is exercised based on an understanding of the intent of the guidelines and reacting accordingly.

FACTOR 4, COMPLEXITY

Level 4-1 -- 25 Points

The work consists of tasks that are clear-cut and directly related. There is little or no choice in deciding what needs to be done. Actions to be taken or responses to be made are readily discernible. Characteristically, the work is quickly mastered.

Level 4-2 -- 75 Points

Assignments consist of performing a variety of routine procedural tasks or one or more complex duties related to regular and recurring technical work, operating a variety of pieces of equipment or one or more complex equipment systems commonly associated with the work site, and/or performing a full variety of the standardized technical support and technical duties associated with the work.

Page 23, 12/91, TS-111

Performance of the assignments requires making choices when, for example, executing a number of types of sequential, related steps or assembling several pieces of equipment. In addition, duties assigned often have steps or processes which vary, depending on factors such as the reason the work is being performed or the conditions under which it is being performed. The employee is expected to exercise independence in recognizing such differences, choosing the right course of action, and then selecting and executing the proper task sequences for completing the work.

The employee deals with facts, e.g., is expected to spot readings which are outside the normal range of tolerance or acceptability, or is expected to determine how best to present raw data. The employee determines what needs to be done to update or complete records and documentation packages and initiates action to acquire needed information from others as indicated by situations encountered in the work.

Level 4-3 -- 150 Points

At this level, the work requires the performance of various technical duties which involve differing and unrelated processes and methods. For example, the technician: (1) shifts frequently from one type of responsible technical assignment to other types which are substantially different in terms of equipment, techniques, and methods used, specific data

produced, and uses to which the data will be put; (2) has ongoing or long term responsibility for limited technical and administrative concerns in a small research laboratory or a limited program or operating function; and/or (3) independently executes defined portions of more comprehensive long range projects or assists with several complex experiments which extends over several weeks.

There exists a number of possible courses of action for planning as well as executing the work and the employee is given leeway or is otherwise expected to exercise discretion in choosing from among them. For example, regarding the administrative considerations noted in the preceding paragraph, at this level the technician must be aware of a variety of program and special emphasis goals and independently choose what functions to emphasize as well as how to do so. As for the technical/operational considerations noted in the preceding paragraph, at this level, the technician must determine the best methods for executing assignments. Precedented technical and procedural problems encountered in planning the work, as well as those encountered in the course of executing assignments and in preparing them for submission, are independently resolved. However, the problems encountered with which the technician copes independently have some commonality with others previously encountered in the organization.

Page 24, 12/91, TS-111

Judgment is required in applying a wide range of conventional, established approaches, methods, techniques and solutions to new situations. The technician: (1) identifies and recommends resolution of discrepancies in data based on a study of how the data interrelate; (2) adjusts work methods to accommodate unusual conditions; and/or (3) recommends or determines what data to use, record or report.

FACTOR 5, SCOPE AND EFFECT

Level 5-1 -- 25 Points

The work involves the performance of specific, routine operations that include a few separate tasks or procedures. The major effect of the work is to allow others in the unit to proceed with work processes.

Level 5-2 -- 75 Points

The work involves execution of specific rules, regulations, or procedures, such as those found in common technical manuals, laboratory handbooks, and administrative manuals. Typically, completed assignments constitute a complete segment of assignments with broader scope, e.g., on a day-to-day basis runs a visitors center or collects data for use by others involved in research, administrative planning, or program/project operations.

Work products affect the accuracy, reliability, or acceptability of further procedures, processes or services, e.g., the ability of the scientist to complete with accuracy a phase of the research process; the ability of the planner to complete significant aspects of an annual work plan or a major project; or the quality of day-to-day operations of a significant program in an ongoing production environment.

Page 25, 12/91, TS-111

Level 5-3 -- 150 Points

The work involves applying conventional technical and administrative solutions and practices to a variety of problems. In research environments a major consideration for performing the work is to be closely involved in almost all phases of the scientist's study and have responsibility for selected phases or to conduct test applications of scientific and technical theories when the methods, techniques, and procedures are clearly outlined. In other situations, a major consideration for performing the work is to insure that established operations criteria, rules, or methods are adhered to in a production environment. For example, the employee may have responsibility for the ongoing operation of a field site or for execution of a standardized project or program area cited in an annual or comparable work plan as a performance objective for the organization.

Work products directly affect the design and execution of experiments; the operation of systems, programs, or equipment systems; or the adequacy of such activities as long range work plans, field investigations, testing operations, or research conclusions.

FACTOR 6, PERSONAL CONTACTS AND FACTOR 7, PURPOSE OF CONTACTS

Match the level of regular and recurring personal contacts with the purpose of that contact and credit the appropriate point value using the chart below.

Persons Contacted

1. The personal contacts are with personnel within the immediate work unit(s), project, or organization or with members of the public in very structured or controlled situations, e.g., explaining rules to recreational users of Federal land when assigned to an entry gate.
2. Personal contacts are with employees in the agency, inside and outside of the immediate organizations, e.g., personnel from higher level organizational units, or, occasionally, resource persons from State or local government units, or other Federal agencies. In other work situations personal contacts may be with the general public, contractor personnel, or special users, e.g., private landowners, cooperators, or business persons. The contacts are usually established on a routine basis, though the employee's authority may not be initially clear to the person contacted, e.g., the identity, role, and authority of the parties may have to be outlined before conducting business.
3. The contacts are made on a nonroutine basis and may take place in a variety of settings. The role of each party is developed during the course of the meeting. Contacts are regularly established with: (a) a variety of noted subject matter experts from other Federal agencies, universities, private foundations and professional societies; (b) influential local community leaders such as members of tribal governing bodies or comparable State or local government officials; (c) newspaper, radio and television reporters; (d) legal representatives of private landowners; or (e) representatives of organized landowner or special interest groups.

Page 26, 12/91, TS-111

Purpose of Contacts

- a. The personal contacts are established to: exchange information about procedures, schedules, or operating problems; clarify information on records; report on the results of studies; explain the steps involved in operating equipment; explain the reason the work is being performed; or other similar exchanges of factual information. The facts or information exchanged may range from easily understood to highly technical.
- b. The purpose of personal contacts is to: plan and coordinate work efforts; explain the need to adhere to laws, rules, contract, or lease provisions; discuss inspected work and contract requirements when monitoring activity of contractors; discuss technical

requirements of equipment with manufacturers and resolve problems concerning the work or the peculiar needs of the organization; interpret data obtained and explain its purpose and significance; or reach agreement on operating problems such as recurring submission of inaccurate, untimely, incomplete or irrelevant data. The persons contacted are usually working toward a common goal and generally are reasonably cooperative. At this level, some technicians may be required to deliver information, such as how data were obtained and their opinion as to its accuracy, in court.

Page 27, 12/91, TS-111

- c. The purpose is to influence, motivate, interrogate, or control persons or groups. For example, the purpose of the contacts is to: (1) influence others who are knowledgeable about the work to adopt, within the organization, methods about which there are conflicting opinions among those in the line of work; (2) persuade others, such as suspicious and reluctant landowners, to participate in projects or organizational objectives when there is no requirement for doing so; (3) persuade technical and administrative personnel from outside the government to submit the information desired for a study and to persuade these same representatives of the need for additional information when there is no official or legal basis for requiring submission of the information and there are conflicts with the party(s) involved; and/or (4) gaining compliance with established policies and regulations by persuasion or negotiation. In any case, the persons contacted are characteristically fearful, skeptical, or uncooperative, and skill must be used in the approach made to obtain the desired results.

P U R P O S E

C O N T A C T S		a	b	c
	1	30	60	130*
	2	45	75	145
	3	80	110	180

*This combinations are probably unrealistic.

FACTOR 8, PHYSICAL DEMANDS

Level 8-1 -- 5 Points

The work is principally sedentary though there may be some walking or bending involved.

Page 28, 12/91, TS-111

Level 8-2 -- 20 Points

The work requires some physical exertion, such as regular and recurring running, walking, or bending; walking or climbing over rocky areas, through plowed fields or other uneven surfaces, through dense vegetation, and in mountainous terrain; or climbing ladders or scaffolds to observe, collect, or record research data. In many situations the duration of the activity (such as most of a work day) contributes to the arduous nature of the job. In other situations, such as in a laboratory, there may be special requirements for agility or dexterity such as exceptional hand/eye coordination.

Level 8-3 -- 50 Points

The work requires regular and protracted periods of considerable and strenuous physical exertion such as carrying or lifting heavy objects (over 50 pounds); hacking passages through dense vegetation; or climbing ladders or scaffolds carrying heavy equipment used to install, maintain, or repair research installations.

FACTOR 9, WORK ENVIRONMENT

Level 9-1 -- 5 Points

The work environment involves everyday risks or discomforts which require normal safety precautions typical of such places as offices, meeting and training rooms, libraries, and residences or commercial vehicles, e.g., use of safe work practices with office equipment, avoidance of trips and falls, observance of fire regulations and traffic signals, etc. The work area is adequately lighted, heated, and ventilated.

Level 9-2 -- 20 Points

The work involves regular and recurring moderate risks or discomforts which require special safety precautions, e.g., working around moving parts, carts, or machines; with contagious diseases or irritant chemicals; in a logging or construction site; or performing routine patrol work. For other positions the work may, on a regular and recurring basis, require working outdoors, in meat lockers or other such environments with extreme temperatures, and/or exposure to adverse weather conditions. At this level, employees are required to use protective clothing or gear such as hard hats, masks, gowns, ear plugs, coats, boots, goggles, gloves, or shields to moderate risks, or to follow procedures for minimizing risk.

Page 29, 12/91, TS-111

Level 9-3 -- 50 Points

The work environment involves high risks with regular and recurring exposure to potentially dangerous situations or unusual environmental stress where high risk factors exist which cannot be reasonably controlled. For example, working at great heights under extreme

weather conditions, or working closely with toxins or dangerous pests or animals such as poisonous snakes, where safety precautions cannot completely eliminate the danger.